SEQUENCE LISTING

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Skiadopoulos, Mario H.
Tao, Tao

<120> USE OF RECOMBINANT PARAINFLUENZA VIRUSES (PIVs) AS VECTORS TO PROTECT AGAINST INFECTION AND DISEASE CAUSED BY PIV AND OHTER HUMAN PATHOGENS

<130> 15280-404100US

<140>
<141>

<150> 60/170,195
<151> 1999-12-10

<160> 62

<170> PatentIn Ver. 2.1

<210> 1
<211> 41
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Flanking sequence of Measles HA gene insert for N-P and P-M junctions

<400> 1
cttaagaata tacaaataag aaaaacttag gattaaagag cg 42

<210> 2
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Flanking sequence of Measles HA gene insert for N-P and P-M junctions

<400> 2
gatccaacaa agaaacgaca ccgaacaaac cttaag 36

<210> 3
<211> 101
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Flanking sequence of Measles HA gene insert for HN-L junction

<400> 3
aggcctaaaa gggaaatata aaaaacttag gagtaaagtt acgcaatcca actctactca 60
tataattgag gaaggaccca atagacaaat ccaaattcga g 101

<210> 4
<211> 79
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Flanking sequence of Measles HA gene insert for HN-L junction.

<400> 4
tcataattaa ccataatatg catcaatcta tctataatac aagtatatga taagtaatca 60
gcaatcagac aataggcct 79

<210> 5
<211> 64
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<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Cloning site for GU insertion

<400> 5
aggaaaaggg aaatataaaa aacttaggag taaagttacg cgtgttaact tcgaagagct 60
ccct 64

<210> 6
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Cloning site
for NCR insertion

<400> 6
aggaaaaggg aacgcgtgtt aacttcgaag agctccct 38

<210> 7
<211> 63
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Cloning site
for supernumerary gene insert between the P and M
genes of rHPIV3

<400> 7
ttaacaatat acaaataaga aaaacttagg attaaagagc catggcgtac gaagcttacg 60
cgt 63

<210> 8
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PIV3 gene end
(GE) sequence

<400> 8
aagtaagaaa aa 12

<210> 9
<211> 58
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Cloning site
for RSV G and F gene inserts in B/H PIV3

<400> 9
aggattaaag aactttaccg aaaggtaagg ggaaagaaat cctaagagct tagcgatg 58

<210> 10
<211> 11
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Flanking
sequence for RSV G gene insert in B/H PIV3

<400> 10
gcttagcgat g 11

<210> 11
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Flanking
sequence of RSV G and F gene inserts in B/H PIV3

<400> 11
aagctagcgc ttagc 15

<210> 12
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Flanking
sequence for RSV F gene insert in B/H PIV3

<400> 12
gcttagcaaa aagctagcac aatg 24

<210> 13
<211> 83

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Forward primer
for PCR of measles HA gene insert for N-P and P-M
junctions

<400> 13
ttaatcttaa gaatatacaa ataagaaaaa cttaggatta aagagcgatg tcaccacaac 60
gagaccggat aaatgccttc tac 83

<210> 14
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Reverse primer
for PCR of measles HA gene insert for N-P and P-M
junctions

<400> 14
attattgctt aaggtttgtt cggtgtcgtt tctttgttgg atcctatctg cgattggttc 60
catcttc 67

<210> 15
<211> 55
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Forward primer
for PCR of measles HA gene insert for HN-L
junction

<400> 15
gacaataggc ctaaaaggga aatataaaaa acttaggagt aaagttacgc aatcc 55

<210> 16
<211> 68
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Reverse/Forward primer for PCR of measles HA gene
insert for HN-L junction

<400> 16
gtagaacgcg tttatccggt ctcgttgtgg tgacatctcg aatttggatt tgtctattgg 60
gtccttcc 68

<210> 17
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Reverse primer
for PCR of measles HA gene insert for HN-L
junction

<400> 17
ccatgtaatt gaatccccca acactagc 28

<210> 18
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Forward/Reverse primer for PCR of measles HA gene
insert for HN-L junction

<400> 18
cggataaacg cgttctacaa agataacc 28

<210> 19
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Upstream HPIV2
HN primer

<400> 19
gggccatgga agattacagc aat 23

<210> 20
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Downstream
HPIV2 HN primer

<400> 20
caataagctt aaagcattag ttccc 25

<210> 21
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Upstream HPIV2
HN primer

<400> 21
gcgatgggcc cgaggaagga cccaatagac a 31

<210> 22
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Downstream
HPIV2 HN primer

<400> 22
cccgggtcct gatttcccga gcacgctttg 30

<210> 23
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: HPIV1 HN

primer

<400> 23
agtggctaat tgcattgcat ccacat 26

<210> 24
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: HPIV1 HN primer

<400> 24
gccgtctgca tggtgaatag caat 24

<210> 25
<211> 13
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Oligomer insert for rule-of-six conformity

<400> 25
cgcggcaggc ctg 13

<210> 26
<211> 14
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Oligomer insert for rule-of-six conformity

<400> 26
cgcggcgagg cctg 14

<210> 27
<211> 15
<212> DNA

<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Oligomer
insert for rule-of-six conformity

<400> 27
cgcgaggcct ccgcg 15

<210> 28
<211> 16
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Oligomer
insert for rule-of-six conformity

<400> 28
cgcgccgcgg aggcct 16

<210> 29
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Oligomer
insert for rule-of-six conformity

<400> 29
cgcgcccgcg gaggcct 17

<210> 30
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Forward primer
for RSV A G gene insert

<400> 30
aattcgctta gcgatgtcca aaaacaagga ccaacgcacc gc 42

<210> 31
<211> 92
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Reverse primer
for RSV A G gene insert

<400> 31
aaaaagctaa gcgctagcct ttaatcctaa gtttttctta ctttttttac tactggcgtg 60
gtgtgttggg tggagatgaa ggttgtgatg gg 92

<210> 32
<211> 65
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Forward primer
for RSV A F gene insert

<400> 32
aaaggcctgc ttagcaaaaa gctagcacaa tggagttgct aatcctcaaa gcaaatgcaa 60
ttacc 65

<210> 33
<211> 89
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Reverse primer
for RSV A G gene insert

<400> 33
aaaagctaag cgctagcttc tttaatccta agtttttctt acttttatta gttactaaat 60
gcaatattat ttataccact cagttgatc 89

<210> 34
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Mutagenic
forward primer for modification of rHPIV3-1 cDNA

<400> 34
cggccgtgac gcgtctccgc accggtgtat taagccgaag caaa 44

<210> 35
<211> 59
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Mutagenic
reverse primer for modification of rHPIV3-1 cDNA

<400> 35
cccgagcacg ctttgctcct aagtttttta tatttcccgt acgtctattg tctgattgc 59

<210> 36
<211> 95
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Forward primer
for insertion of HPIV2 F ORF into rB/HPIV3 genome

<400> 36
aaaatatagc ggccgcaagt aagaaaaact taggattaaa ggcggatgga tcacctgcat 60
ccaatgatag tatgcatttt tgttatgtac actgg 95

<210> 37
<211> 72
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Reverse primer
for insertion of HPIV2 F ORF into rB/HPIV3 genome

<400> 37
aaaatatagc ggccgctttt actaagatat cccatatatg tttccatgat tgttcttgga 60
aaagacggca gg 72

<210> 38
<211> 81
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Forward primer
for insertion of HPIV2 HN ORF into rB/HPIV3 genome

<400> 38
ggaaaggcgc gccaaagtaa gaaaaactta ggattaaagg cggatggaag attacagcaa 60
tctatctctt aaatcaattc c 81

<210> 39
<211> 54
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Reverse primer
for insertion of HPIV2 HN ORF into rB/HPIV3 genome

<400> 39
ggaaaggcgc gccaaaatta aagcattagt tcccttaaaa atggtattat ttgg 54

<210> 40
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for
construction of PIV3-2 chimeric cDNAs, PIV2 F
(sense)

<400> 40
gtaccatgga tcacctgcat ccaat 25

<210> 41
<211> 31
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV2 F (antisense)

<400> 41
tgtggatcct aagatatccc atatatgttt c 31

<210> 42
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV2 F (sense)

<400> 42
atgcatcacc tgcatccaat 20

<210> 43
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV2 (antisense)

<400> 43
tagtgaataa agtgtcttgg ct 22

<210> 44
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV2 HN (sense)

<400> 44
catgagataa ttcatcttga tgtt 24

<210> 45
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV2 HN (antisense)

<400> 45
agcttaaagc attagttccc ttaa 24

<210> 46
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV3 F (sense)

<400> 46
atcataatta ttttgataat gatcatta 28

<210> 47
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV3 F (antisense)

<400> 47
gttcagtgct tgttgtgtt 19

<210> 48
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV3 HN (sense/antisense)

<400> 48
tcataattaa ccataatatg catcaat 27

<210> 49
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV3 HN (sense)

<400> 49
gatggaatta attagcacta tgat 24

<210> 50
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV2 F (antisense)

<400> 50
atgcatcacc tgcatccaat 20

<210> 51
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV2 F (sense)

<400> 51
gatgatgtag gcaatcagc 19

<210> 52
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV2 HN (sense)

<400> 52
actgccacaa ttcttggc 18

<210> 53
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV2 HN (antisense)

<400> 53
ttaaagcatt agttccctta aaaatg 26

<210> 54
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV3 F (sense)

<400> 54
aagtattaca gaattcaaaa gag 23

<210> 55
<211> 20

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV3 HN (antisense)

<400> 55
cttattagtg agcttgttgc 20

<210> 56
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV2 F (sense)

<400> 56
accgcagctg tagcaatagt 20

<210> 57
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV2 HN (antisense)

<400> 57
gattccatca cttaggtaaa t 21

<210> 58
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV3 M

(sense)

<400> 58
gatactatcc taatattatt gc 22

<210> 59
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV3 L (antisense)

<400> 59
gctaattttg atagcacatt 20

<210> 60
<211> 15492
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Sequence of pFLC.PIV32, 15492 bp in sense orientation

<400> 60
accaaacaag agaagaaact tgtctgggaa tataaattta actttaaatt aacttaggat 60
taaagacatt gactagaagg tcaagaaaag ggaactctat aatttcaaaa atgttgagcc 120
tatttgatac atttaatgca cgtaggcaag aaaacataac aaaatcagcc ggtggagcta 180
tcattcctgg acagaaaaat actgtctcta tattcgccct tggaccgaca ataactgatg 240
ataatgagaa aatgacatta gctcttctat ttctatctca ttcactagat aatgagaaac 300
aacatgcaca aagggcaggg ttcttggtgt ctttattgtc aatggcttat gccaatccag 360
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